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TO: John Sanders, Chief
Environmental Monitoring Branch
Department of Pesticide Regulation

FROM: Kenneth Stroud, Chief
Air Quality Surveillance Branch
Monitoring and Laboratory Division

DATE: October 27, 2005

SUBJECT: RESULTS OF ACROLEIN APPLICATION MONITORING

The purpose of this memorandum is to transmit results from ambient air monitoring conducted by Special Purpose Monitoring Section (SPMS) staff during the application of acrolein into a canal in Kern County on August 3, 2005. This monitoring was performed as part of a pilot study to determine the applicability of proposed field test methods before proceeding with a full-scale application study.

A description of test activities is presented in the document entitled "Sampling Protocol for Acrolein Application Pilot Study" and included as Attachment I

This monitoring was performed at the request of the Department of Pesticide Regulation (DPR) in a draft report of recommendations dated January 2005.

Monitoring Summary:

Six evacuated canisters, each equipped with a passive flow controller, were deployed near the application point at six sampling sites (sites #2 and #3 collocated). The canister valves were simultaneously opened at the beginning of application when acrolein was being introduced into the canal. At the end of application the canister valves were closed. The total sampling period was four hours. The target sample flow rate was set for 20 cc per minute. The actual sample flow rate was measured by a certified mass flow meter and recorded approximately every half-hour.

During the application, an Automet meteorological station was operated. The station collected one-minute averages of wind speed, wind direction, ambient temperature and relative humidity. Summary of meteorological data are included in Attachment II.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

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According to historical wind patterns for the application location, predominate wind direction is from the northwest to the southeast. This wind direction was present during a pre-application visit to the site and present during the sampling equipment setup on the morning of August 3, 2005. With this in mind, most of the samplers were located at anticipated downwind sites. However, once the application started, the wind direction came from the southeast and later from the southwest. No canister samplers were located to the north of the application point.

The canal water flow runs north to south at the point of application. The canister sampling sites were arranged down stream from the application point on both sides of the canal on top of the canal's banks. A field sketch of the sample sites with respect to the application point, is shown in Figure 1. Photos are also attached. Note: All distance measurements are from the point of application to the sampling sites.

Sampling site #1 (east bank): 70 ft south and 30 ft east of application point (app pt.)
Sampling site #2 (east bank): 115 ft south and 30 ft east of app pt. (collocated with #3)
Sampling site #3 (east bank): 119 ft south and 30 ft east (collocated with #2)
Sampling site #4 (east bank): 190 ft south and 30 ft east of app pt.
Sampling site #5 (west bank): 45 ft south and 30 ft west of app pt.
Sampling site #6 (west bank): 110 ft south and 30 ft west of app pt.

Application Data Obtained from the Applicator:

Application Location: Head of Kern Island, Bakersfield, Kern County
Canal Vegetation Condition: Code C growth
Canal Flow Rate: 400 cubic feet per second (cfs)
Estimated Canal Water Depth: 3-4 feet
Linear Flow Rate: >2.5 miles per hour
Canal Water Temperature: 71°F
Acrolein Dosage: 0.50 gallons per cfs
Acrolein Gallons per Hour: 47
Total Acrolein Applied: 188 gallons (1,316 lbs)
Injection Pressure: 30 psi
Orifice Size: 0.081
Target Concentration: 3.9 ppm
Application Time: 06:30 to 10:30 PST (07:30 to 11:30 PDT)
Application Date: August 3, 2005

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Monitoring Results:

The canister samples were received by the Organics Laboratory Section of the Monitoring and Laboratory Division on August 4, 2005 and analyzed for acrolein by gas chromatography/mass spectrometry method MLD066.

Laboratory analytical results:

<u>Canister Number</u>	<u>Site Number</u>	<u>Acrolein Concentration (ppb)</u>
22599	1	18.3
31950	2	15.9
22869	3	18.1
4801	4	18.4
4028	5	59.8
24849	6	43.2

Meteorological data collected during the application are presented in Attachment II. Review of wind speed indicates a range of approximately one to five knots per hour; wind direction predominantly from the south at between 135 and 225 degrees.

If you have any questions or need additional information, please contact me at (916) 445-3745 or via email at kstroud@arb.ca.gov.

Attachments:

cc: William V. Loscutoff, MLD
Michael Poore, MLD
Randy Segawa, DPR
Lynn Baker, SSD
Jack Romans, MLD



**Overall southwest view canal and samplers
Head of Kern Island, Oildale, Kern County
August 3, 2005**



**Middle pipe injected at upstream opening with Acrolein
Head of Kern Island, Oildale, Kern County
August 3, 2005**